IMPACT OF NUTRITION EDUCATION PROGRAM ON HEALTH RELATED QUALITY OF LIFE OF UNIVERSITY STUDENTS

Synopsis

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1.0 INTRODUCTION

Nutrition is a prime factor for the development and maintenance of good health. The health and nutritional status of the university students reflect the future of any country as they are the most high-risk group of our population and the foundation of the nation. **(Rana, 2020).**

The university student's nutritional problem is a major issue in developing countries. Inadequate nutrition can cause malnutrition, reduced physical capacity along with decreased mental and social development. Presently, factors like workload, stress, peer group pressure, imbalanced life style and food habits leads to disturbed eating habits of students, many college students have common unhealthy eating patterns such as meal skipping, eating away from home, snacking and fast-food consumption but they need a wide range of nutrients because it is a period of rapid growth and development in which up to 45% of skeletal growth and 15 to 25% of adult height is achieved.**(Gebregyorgis, 2016).**Throughout this period, risk of nutrition inadequacies and other health issues are of great concern due to rapid growth in stature, muscle mass and fat mass. As a result of these serious nutritional challenges, university students s would be negatively affected therefore nutrients for different physiological groups can only be derived from a well-balanced diet and the food which eat provide energy (calories) and nutrients such as protein, fat, carbohydrate, vitamins, minerals, and water. Eating healthy foods in the right amount give the body energy to perform daily activities, helpus to maintain a healthy body weight, and can lower risk for certain diseases such as diabetes and heart disease and the unhealthy dietary patterns and poor nutritional status of university students can affect their health related quality of life and academic performance. There is an increasing pressure in college to persistently improve their performance by reducing the college time for health education and physical activities, which may, however indirectly affect student's health and their healthrelated quality of life. Several factors, including psychological, economic, environmental, social, and personal issues, as well as the food intake patterns and nutritional status, might affect the performance and status of students.

1.1 Nutritional Scenario of adolescent in India

In India, 40% of girls and 18% of boys are anemic. Anemia among college adolescent adversely affects growth, resistance to infections, cognitive development and work productivity. In 2018

adolescent nutrition received renewed political and program focus, owing to the national-wide launch of the **POSHAN Abhiyaan 2018-20. (UNICEF).**

World Health Organization (WHO) define adolescent as a period of life ranging which is the transition from dependent childhood to independent adulthood. Worldwide, there is about 1.2 billion adolescents, representing more than 18% of the global population. (**Hadush, 2021).**

In India adolescents and young people, account for nearly one quarter of the total population. UNICEF India has been the partner of choice in supporting the universal roll-out of the Weekly Iron and Folic Acid Supplementation Programmed in 14 major states in India, which jointly are home to 88% of India's adolescent girls. India is drawing the world's attention, due to its population explosion with prevailing poor health scenario due to malnutrition, under nutrition and nutritional deficiencies **(Global Hunger Index- GHI2015).**

According to **National Family Health Survey Reports,** 46% of preschool children and 30% of adults in India suffer from moderate and severe grades of protein-calorie malnutrition as judged by anthropometric indicators and the important sign of nutritional status is height, mid-arm circumference, weight, and skinfold thickness. Low levels of nutrition adversely affect physical and mental growth of university student. Many mental health problems emerge in late childhood and early adults. Some of the common mental health problems include conduct disorders, anxiety, depression and eating disorders as well as other risk behaviors including those that relate to sexual behavior, substance use and violent behavior.

1.2 Nutrition requirements of adolescent in India

- Adolescence is the most important period of life where growth and development are accompanied by various physical, physiological, behavioral and social changes.**WHO (Delisl, 1999).** This leads to increased demand for nutrients that in turn could pose a greater risk of under nutrition.
- Nutrition and physical growth and health related quality of life are integrally related; optimal nutrition is a requisite for achieving full growth potential. Failure to consume an adequate diet at this time can result in delayed sexual maturation and can arrest or slow linear growth. (**Story, 2005).** Nutrition is also important during this time to help prevent adult diet-related chronic

affected by emergency situations all over the world; therefore, a high number of university students s may present diseases, such as cardiovascular disease, cancer, and osteoporosis. Globally, hundreds of millions of people are estimated to be increased risk of being exposed to under-nutrition (**Cordeiro, 2012**) is usually divided into two phases: early university students and late university students Physiologically, the early years are dominated by pubertal changes and the later stages by sexual maturation and development of adult roles and responsibilities. (**Patton, 2016).**

- Adolescenceneeds a wide range of nutrients to perform various functions of the body and lead to healthy life. University students are in a vulnerable group for malnutrition and its consequences, because it is a dynamic period of physical growth and mental development. (**Weres, 2015).** Nutrition being an important determinant of physical growth of university student is an important area that needs attention. They are a nutritionally vulnerable group for their high requirements for growth, their eating patterns and lifestyles, and their risk-taking behaviors; their susceptibility to environmental influences and hard physical work, as commonly observed in low-income countries, may impose additional physiological stress and nutritional requirements in university students. Dietary behaviors established in university students may contribute to nutrition-related problems that have consequences for long-term health. (**Bhargava, 2020).**
- Poor nutrition during adolescence can impair the work capacity and productivity of university student's boys and girls in their later years. Further, an undernourished girl is at the risk of developing complications during pregnancy and the chances of her giving birth to low-birth-weight baby increases, thus perpetuating a vicious cycle of malnutrition and ill-health.
- According to WHO, the recommended indicator to assess the nutrition status of adolescence are thinness (low body mass index for age) and stunting (low height for age), where the former is a result of mainly acute (short term), and the latter shows chronic (long term) nutritional deficiency. (**Radu, 2007).**
- Adolescence females require approximately 2200-2403 calories/day, whereas male university students require 2500-3000 calories/day. (**Parekh, 2020).** Additional intake requirements

include fat, calcium, iron, zinc, vitamins, and fiber.

- Adolescence growth spurt during this period creates an increased need for many nutrients. Eating right assures an adequate amount of key nutrients: calcium, iron and vitamins A, C and D. (**Parekh, 2020).**

Table-1 Nutrition requirements for adolescence

S. No.	Nutrients	Male	Female
1	Energy (Kcal/d)	3320	2500
2	Protein (g/d)	45.0	37.0
3	Calcium (mg/d)	850	850
4	Magnesium (mg/d)	367	317
5	Iron (mg/d)	18.0	18.0
6	Zinc (mg/d)	14.7	11.8
7	Iodine (ug/d)	100	100
8	Thiamine(mg/d)	1.9	1.4
9	Riboflavin (mg/d)	2.5	1.9

(ICMR, 2020)

1.3 Health-related quality of life (HRQOL)

Quality of life is defined by the World Health Organization as an "individuals' perception of their position in life in the context of the culture and value systems in which they live and their relation to their goals, expectations, standards and concerns" because of the nature of the various socio demographic factors related to students' well-being, further examination of the health related quality of life among university students is needed. (**Sharma, 2021).**

The concept of health-related quality of life (HRQOL) and its determinants have evolved since the 1980s to encompass those aspects of overall quality of life that can be clearly shown to affect health—either physical or mental.

"**Health** is a state of complete physical, mental, and social well-being—not merely the absence of disease, or infirmity." (**World Health Organization, 1948).**

Health-related quality of life (HRQOL) is a useful indicator of overall health because it captures information on the physical and mental health status of individuals, and on the impact of health status on health-related quality of life **(**HRQOL) is usually assessed via multiple indicators of self-perceived health status and physical and emotional functioning. (**Georgia, 2000).**

In recent years, quality of life has been addressed as an important index to assess personal health, decision making and judgment of the overall health of the society and to find the main problems in various aspects of

people's lives problems associated with a poor health related quality of life of the university students include poor interpersonal relations, depression, and low self-esteem. Moreover, these psychological problems have a significant impact on students' achievement and performance and the poor mental health can impact college campuses in a variety of ways, including student health outcomes, academic performance, and student retention and graduation rates**. (Ziapour, 2018).**Health related quality of life is a broad concept pertaining to the sense of well-being and satisfaction in student's life. Mental health challenges have a negative impact on the health behaviors of college students. Major depression, panic disorders, and generalized anxiety disorder are strongly associated with cigarette smoking among university students. Strategies related to academic performance and retention," the risk of those experiencing mental health challenges also experiencing academic challenges is high.

The nutritional status of the students plays an important role in the learning and performance of the students at college as most of the students in a rural area were not getting the required amount of nutrient which were essential for their proper growth and development of physical as well as intellectual abilities.

Good health and quality of life is closely related to good nutrition status. (**Nair, 2001).**

Health-related quality of life **(**HRQOL) provide useful information to care providers as they can be used to screen and monitor for psychosocial problems or when auditing healthcare practice. HRQOL can be used in population surveys of perceived health problems or other aspects of health-services or evaluation research. Health-related quality of life **(**HRQOL) will be help to monitor progress in achieving the nation's health objectives.\

1.4 Need of the study

- Health status of university students is important because they contribute to economic growth of the country. If the nutritional status is not good it will lead to negative effects on health. **(Grygiel, 2016).**
- Overall poor nutrition can effect physically and mentally. Improper nutrition will make university students feel more lethargic, depression, anxiety and physically ill.
- Hence this study will assess the health status of the students going in to different universities and also NEP (Nutrition Education Program) will be provided to give them a better knowledge about

food.

- Health status can also help to prevent student's illness. Proper food habits will provide good health
- Therefore keeping in view the above facts the proposal study entitled **"Impact of nutrition education program on health related quality of life of university students"**

1.5 Objectives

1) To assess the socio-demographic profile of the sample.
2) To assess the nutritional status and health related quality of life of sample.
3) To develop and implement Nutrition Education Program (NEP).
4) To assess the effect of developed Nutrition Education Program (NEP) on nutritional status of the sample.
5) To assess the effect of developed Nutrition Education Program (NEP) on health related quality of life of the sample.
6) To assess the acceptability and sustenance of Nutrition Education Program (NEP) among the sample.

1.6 Operational definition

1.6.1 Nutrition

Nutrition is about eating a healthy and balanced diet. Food and drink provide the energy and nutrients you need to be healthy. Nutrition is defined as the science of foods, nutrients and other substances they contain; and of their actions within the body including ingestion, digestion, absorption, metabolism and excretion. (WHO).

1.6.2 Nutritional status

The definition of nutritional status is: The condition of the body as a result of the intake, absorption and use of nutrition, as well as the influence of disease-related factors. Nutritional status is current status of student related to their dietary pattern and anthropometric measurements.

1.6.3 Health

The World Health Organization's definition of health is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

1.6.4 Health related quality of life

Health-related quality of life (HRQOL) is an individual's or a group's perceived physical and mental health over time. It is a measure of an individual's ability to function physically, mentally, emotionally and socially within his/her environment at a level consistent with his/her own expectations. (**Church, 2004).**

1.7 Delimitations

- ❖ This study will be done only in Agra city.
- ❖ Only 400 respondents will be selected for the study.
- ❖ In this study university students will be taken.

2.0 Review of literature

Table-2 Review of literature

S. No.	Title of research	Researcher	Year	Major Finding
1	Evaluating the profile of health and lifestyle effect among undergraduate students in the university campus	Mahidin M. et., al.	2021	In this study findings show the variables like the unhealthy lifestyle, food consumption and lack of physical exercise have a significant relationship to the students' health problem including the academic results. Therefore, the university's top management perhaps need to inspire their students to improve health condition and well-being in order to pursue better performance in academic.
2	Impact on dietary patterns and nutritional status on the academic performance of Omani school students	Ali A. et., al.	2020	This study results indicated that 36% of students regularly consumed breakfast, whereas only 21.7% had daily 3 meals. Similarly, 30.5% of students consumed fruits ≥ 2 serving/day,26.6% consumed vegetables ≥ 3 serving/ day, and 49.8% consumed fish ≥ 2 serving/week. The study showed that healthy dietary patterns and improved nutritional status of school students showed a positive association with their academic performance, suggesting that more focus should be placed in developing healthy dietary patterns.
3	Nutritional Assessment among Undergraduate Students of the Islamia University of	Ahmad K., et., al.	2020	This study evaluated nutritional status of undergraduate. (48.8%) male students and (51.2%) female students among age 17 to 25 are present in this study. Average calories intake of (73%) of students is less than

	Bahawalpur			recommended values. According to the researcher; there should be nutrition education awareness and sessions for students to increase their knowledge and benefit regarding proper diet and its effect on their health.
4	Associations between Nutritional Status and Health-Related Quality of Life among Long-Term Care Residents in Helsinki	Salminen K. S. et., al.	2019	This study found that the 64% were at-risk of malnutrition and 18% suffered from malnutrition. Residents in the "malnourished" group were more dependent in activities of daily living functioning, suffered more often from dementia, had lower cognitive level, used fewer medications, and were eating more often inadequately. HRQoL was statistically significantly associated with MNA total score in both female and male residents. In partial correlation analysis, all dimensions except for sleeping and breathing were positively associated with MNA score.
5	Association between nutritional status and health related quality of life among long term care residents in Helsinki.	Suominen M. H. et. al.	2019	In this study the participants, 64% were at-risk of malnutrition and 18% suffered from malnutrition. Residents in the "malnourished" group were more dependent in activities of daily living functioning, suffered more often from dementia, had lower cognitive level, used fewer medications, and were eating more often inadequately. HRQoL was statistically significantly associated with MNA total score in both female and male residents.
6	Health-related Quality of Life among University Students: The Role of Demographic Variables.	Ziapour A. et., al.	2018	This study aimed to investigate the effect on factors associated with quality of life on health promotion among students. Quality of life of the students was relatively high. The result also demonstrated that the mean and SD of the health related quality of life of students measured 2.55+. 0.40. The reason of variability of the quality of life score in different studies is that the sociocultural differences and personal characteristics affect the quality of life in various environments.
7	A study on association of nutritional status with depression	Bano R., et. al.,	2017	Association between multiple socio-demographic characteristics, Vitamin D deficiency, and hemoglobin level with depression. A high and alarming prevalence of depressive symptoms. Female and vitamin D deficiency showed statistical significance with depression. Being anemic was also strongly associated with depressive symptoms. Mean of BMI was 23.2±4.9years with a range of 25 among the general population was found.
8	Health related quality	Nur N. et., al.	2017	In this study young student's HRQOL is

	of life associated factors among under graduate university students			affected by socioeconomic, demographic and behavioral factors. HRQOL is likely to be higher among those living in urban areas, non-smokers, those with have 334 adequate amount of pocket money, and those with higher BMI index. Health-promoting strategies should target modifiable risk factors and consider socioeconomic support to improve the HRQOL among university students.
9	Determinants of health-related lifestyles among university students	Aceijas C. et., al.	2017	The aim of this study was to investigate students' health-related lifestyles. This study provides that the health-related lifestyles of the student population are worrying and suggests that the trend in chronic diseases associated with unhealthy lifestyles sustained over years might be unlikely to change in future generations. University students' health-related lifestyle is a concern. Nine out of the identified 10 predictors of problematic physical activity, nutrition and mental wellbeing, were environmental/societal or institutional barriers.
10	Exploring nutritional status, physical activity and body mass index of Pakistani teens	Khan K., et. al.,	2016	This study indicated that a large proportion of school and college students had physical inactivity, unhealthy dietary habits and they were overweight. All these interrelated factors were independent of their household socioeconomic condition and ethnicity. There is a need to educate and create awareness about healthy lifestyle among the adolescents and the community at large.
11	Assessment of nutritional status and its related factors among Iranian university	Saadat S. et., al.	2016	The results obtained through the methods of nutritional status reviled that due to the BMI categories, some cases of malnutrition including both underweight and overweight were observed among the studied students. Examining the consumed food indicated qualitative and quantitative deficiencies as compared with standard recommendation, so that students were affected by hidden hunger resulting from micronutrient deficiency.
12	Physical activity, nutritional status, and dietary habits of students of a medical university.	Grygiel B., et. al.,	2016	In this study found that nutritional habits and physical activity influence the health status of young adults. Anthropometric parameters, dietary habits (7-day dietary recall), and level of physical activity were measured. It was found that the female subjects consumed low amounts of total fat and calcium. Therefore, this study concluded that the dietary habits should be modified to prevent the development of diet-dependent diseases. Various forms of physical activity should be proposed to students and they

				should be encouraged to participate in high level of physical activity so as to promote good health status.
13	The relationship between lifestyle and general health of students at Islamic Azad University of Bandar Abbas	Mazhariazad F. and Roozbeh N.	2015	The study aimed to investigate the relationship between lifestyle and general health of students. This study shows the necessity for the attention and emphasis on the role of increased awareness of students about improvement of lifestyle and proper behavioral models. Through the improvement of lifestyle, outbreak of diseases may be prevented.
14	Study of Nutritional Status in Relation to Physical Activity of College Going Adolescent Girls.	Katare D. and Chaturvedi M.	2014	Overall prevalence of thinness was found to be 17.0% and 11.4% (BMI <5th percentile according to NCHS-CDC reference) among urban and rural college going adolescent girls respectively. Overall prevalence of overweight was found to be 5.4% and 3.9% (BMI >85th percentile according to NCHSCDC reference) among urban and rural college going adolescent girls, respectively.
15	Nutritional status of undergraduate healthcare students at the University of the Free State	Abera B. et., al.	2014	This study aimed to evaluate the lifestyle habits of South African students preparing for careers in health care that could influence the efficacy of their counselling practices on risk factors for non-communicable diseases as future healthcare professionals. The poor dietary and lifestyle habits of most participants highlight the need to not just educate 59% were active and 39% were very active owing to busy class schedules, but only 32% participated in formal exercise and sports.
16	Health Related Quality of life among undergraduate medical students of Kolkata	Das P., et. al.,	2013	In this study the health is estimation of well-being and assessed by measuring the improvement in the quality of life related to health care. Students of all semesters had a similar pattern of score distribution. Among students of age > 23 years, moderate depression was found in higher ratio.
17	Physical mental, emotional social health status of adolescents and youths in Benghazi	Salam A. A. et., al.	2012	A cross-sectional study was carried out to assess the physical, mental, emotional and social health status of adolescents and youths attending 2 large universities and to determine variables associated with their health status. Major health problems were depression/anxiety and pain/discomfort, and these were suffered by significantly more females than males.
18	Factors associated with health-related quality of life among Belgrade University students	Pekmezovic T. et., al.	2010	The aims of the study were to evaluate health-related quality of life (HRQoL) among students of University. In this study, the highest SF-36 scale score was obtained for Physical Functioning. Students who lived

				with parents had statistically significantly higher scores of majority of SF-36 domains. The total SF-36 score significantly correlated with average monthly family income. Findings indicate that multiple factors are adversely associated with students' HRQoL.
19	Prevalence of depression its correlates among students and its effects on health-health related quality of life Turkish university	Arslan G. et., al.	2009	In this study the students (45.9%) were males and (54.1%) females. Overall, the prevalence of depression was 21.8% (*n*=179/822). The prevalence of depression among the university students in this region of Turkey was wide-spread, affecting negatively the HRQoL of the students. For prevention and control of depression, depression information and knowledge need to be addressed by health education programs.

3.0RESEARCH METHODOLOGY

Research is a diligent and systematic inquiry or investigation into a subject in order to discover or revise facts, theories and application methodology followed by particular discipline

The present study is an intervention-based research with the motive of providing Nutrition Education Program (NEP) to maintain good diet and maintain health related quality of life.

The phases of the research are-

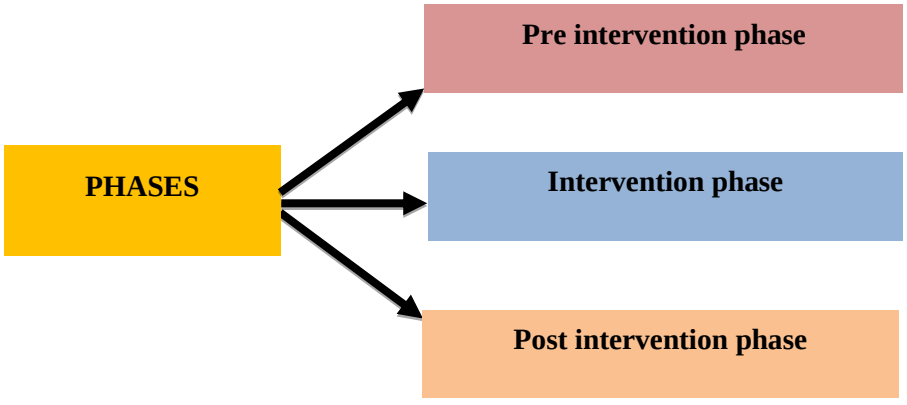

Fig: 1 phases of the research

3.1 Locale of the study

Agra city in Uttar Pradesh will be selected. Agra city will be selected conveniently. Multi-stage stratified random sampling method will be used to extract the required data for the study.

3.2 Steps for sampling

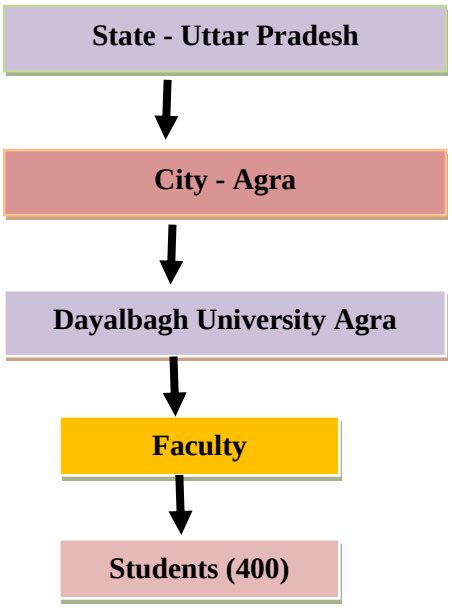

Fig: 2 Steps for sampling

3.3 Selection of sample size

In this research total 400 university students will be selected for study. 400 students will be selected from Dayalbagh University Agra.

3.4 Criteria of sample selection

- University students will be selected for the present study.
- Students between 19 to 23 years will be selected for the study.
- The willingness and interest of students will be assessed. Those students who have interest and are willing to upgrade their status will be selected for the study. A self-designed questionnaire will be used for the assessment of willingness and interest of the sample.

3.5 Phases of Research

The proposed study will be carried out in three phases which are further detailed below:

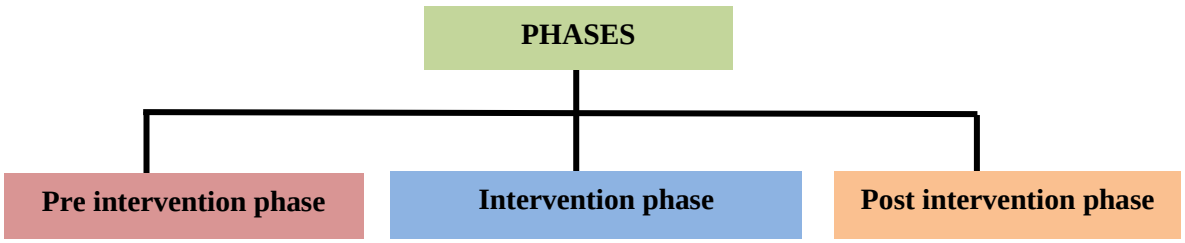

Fig: 3 Phases of Research

3.5.1 Phase: 1 Pre intervention phase

In this phase the demographic profile, nutrition status and health related quality of life of university students will be studied. For this well-structured, pre-tested, and validated questionnaire will be distributed to all respondents and they will be requested to read it carefully, understand thoroughly before filling. Socio demographic data will be collected in the form of sex, age, educational qualification, monthly household income.

3.5.1.1 Assessment of nutritional status of selected respondents

Nutritional status will be assessed through anthropometric and dietary habits. 24hr dietary recall, Food frequency questionnaire and anthropometry (height, weight, BMI, hip ratio and waist circumference) will be used to collect the data.

3.5.1.2 Dietary assessments

The development of healthy eating practices is essential as the rapid physical growth in university students is related to high nutritional requirements. Information regarding the diet-related behavior of the students will be collected in the prescribed Performa. A well-formulated questionnaire will be used to assess the dietary habits, and Food consumption pattern including junk food consumption, lifestyle pattern, meal pattern and other factors that influence the physical health of representative samples of the selected respondents.

3.5.1.3 Anthropometric measurements

Anthropometric measurements are highly sensitive to the broad spectrum of nutritional status, since biochemical and clinical indicators are helpful only at excesses of malnutrition. Body mass index (BMI) and mid-upper-arm-circumference (MUAC) are the most significant and reliable among the widely used anthropometric measurements.

- Height will be measured by Stadiometer scale.
- Weight will be measured using a digital weighing balance. Participant will be wear lightweight clothing and without shoes. Weight is the most widely used and the simplest, reproducible anthropometric measurement for the evaluation of the nutritional status of students.
- BMI will be measured using a digital machine.
- Waist circumference will be measured with an inelastic tape at the midpoint between the iliac crest

and the lower border of the last floting rib at the end of a normal expiration.

3.5.2 Phase: 2 Intervention phase

In this phase NEP (Nutrition Education Program) will be implemented for 180 days.

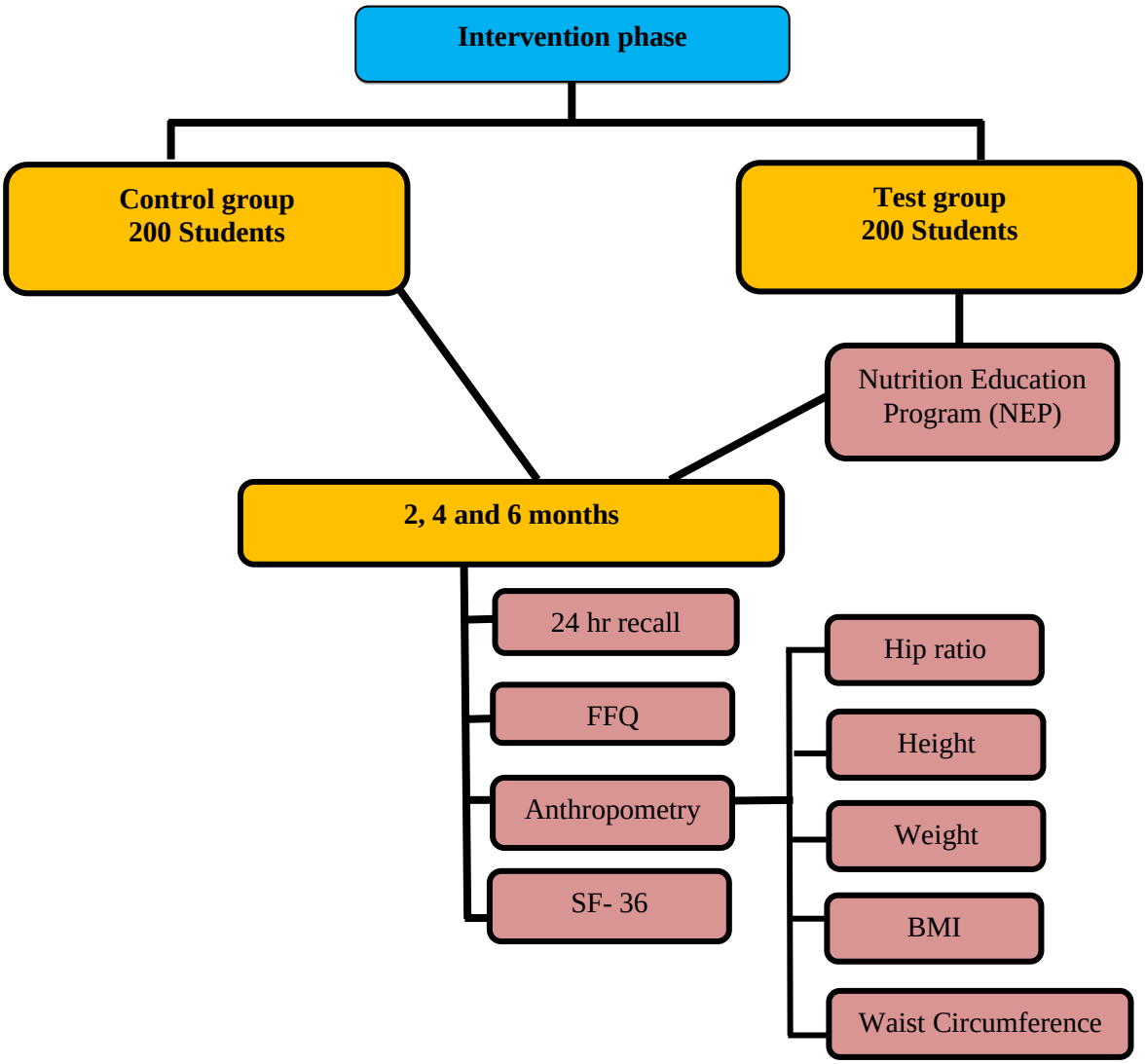

Fig: 4 Intervention phase

3.5.2.1 Nutrition Education Program (NEP).

Nutrition Education Program is a key element in promoting sustainable healthy eating behaviors.

The importance of learning nutrition-related knowledge early for future health is widely recognized.University based interventional programs that will be conducted to increase knowledge about nutrition, health related quality of lifeand food choices. **(Nalam. 2017).**

Nutrition Education Program is a method to enhance awareness among the population to trigger healthy eating behavior. (**Wadden, 2011**).

Good nutrition maintains physical strength, mobility, endurance, hearing, vision, and cognitive

abilities. Nutrition education will be included information on physical activity in addition to food and nutrition. **(Marathe, 2000).**The Nutrition Education program (NEP) will consist of the education on nutrition, balanced diet, university student's nutrition diet, healthy food habits and physical activities.

In this research 200 students will be control group and 200 students will be test group.

Informed consent will be collected from all the participants.

Nutrition Education program (**NEP) will be provided through:**

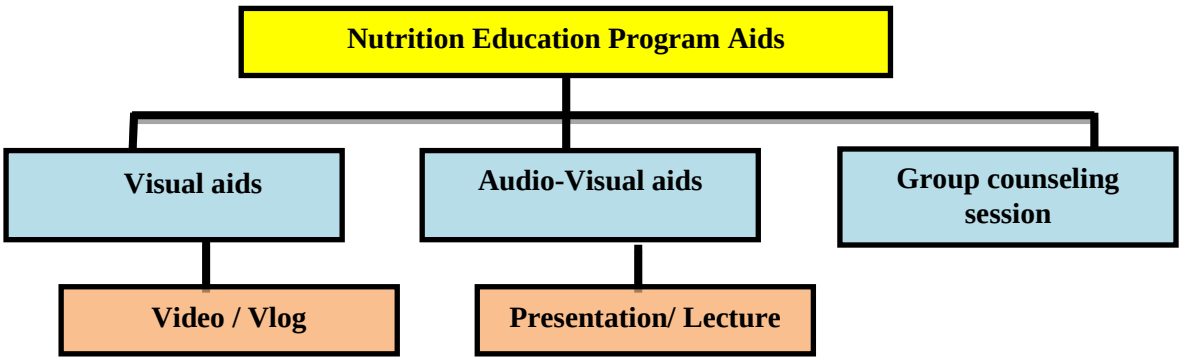

Fig: 5 Nutrition Education Program Aids

These methodswill be used to develop better understanding about the nutrition, nutrients and the process, their importance of these nutrients in daily life.

Basic information on diet, exercise will be provided to the sample. The dietary assessment, anthropometric measurement and health related quality of life will be collected at the end of 2, 4 and 6 months of both groups.

3.5.3 Phase 3: Post Intervention

3.5.3.1 Data collection of post-intervention phase.

During the post intervention final data will be collected from the selected respondents (400 respondents) to assess the Nutritional status and health related quality of life on the basis of their dietary habits, anthropometric measurements.

3.5.3.2 Feedback of Intervention program

In the last of interventionfeedback related to acceptability of Nutrition Education Program (NEP) will be collected with the help of questionnaire or rating scale that will be helpful to improve Nutrition Education Program in future.

3.6 Tool

Table- 3 Details of the Tools to be used in the study

Assessment and Evaluation tools				
S. No.	**Name of the Tools**	**Purpose**	**Components**	**Administration of Tools**
1	**Socio demographic information**	Assessment of willingness and interest of students.	Willingness and interest	Pre – intervention
2	**24hr dietary recall** **FFQ** **Anthropometry**	Assessment of nutritional status of selected students	Food habits Food behavior Height, weight, BMI and Waist Circumference	Pre - Intervention and Post - Intervention
3	**SF- 36 questionnaire** The original questionnaire was developed by **Ware and Sherbourne** in 1992.	Assessment of health related quality of life of sample	Health condition Health status Physical activity	Pre - Intervention and Post – Intervention
4	Acceptability and persistence. Questionnaire.	Acceptability and persistence of Nutrition Education Program	Acceptability	Once during Post–Intervention phase
Educative Tools				
	Name of the Tools		**Types of educative Tool**	
	Information session		Audio-Visual aids	
	Information regarding nutrition and health related quality of life		Visual aids Audio- visual aids Group counseling	

3.7 Statistical tool:-

The following statistical technique will be used to analyze the data, as the data emerges other statistical technique may be applied.

- Percentage
- Arithmetic mean
- Correlation

The suitable statistical tool will be used for analysis of data under supervision of guide.

Reference

- World Health Organization. The World Health Organization Quality of Life Assessment (WHOQOL): position paper from the WHO. *SocSci Med* 1995;41:1403-1409.
- The WHOQOL Group. (1998). The World Health Organization Quality of Life Assessment (WHOQOL). Development and psychometric properties. SocSci Med;46:1569-1585.
- Nair L. V. (2001).Nutritional and health status of elderly women in Kerala
- Ducinskiene D, Kalediene R, Petrauskiene J. (2003). Quality of life among Lithuanian University students. *Acta Med Litu* ;10(2):76-81.
- WHO (2005) World Health Organization. Nutrition in adolescence-issues and challenges for the health sector: issues in adolescent health and development. 5.
- Story M, Stang J. (2005). Chapter 3 Nutrition needs of adolescents; p. 21–34.
- Radu E. and Ciotaru L. (2007). Adolescent malnutrition from anthropological perspective. P; 2:155–8.
- Ghahramani L, Nazari M, Mousavi M. (2009). Improvement of quality of life in elderly men in kahrizak nursing home based on educational intervention. Know Health; 4(2):18-23.
- WHO. (2011). World Health Organization. Monitoring, evaluation and review of national health strategies: a countryled platform for information and accountability;. p. 1–34.
- Al-Shidhani A, Al-Rashdi S, Al-Habsi H, Rizvi S. (2015). Impact of acne on quality of life of students at sultan qaboos university. *Oman Med J*. Jan;30(1):42-47.
- Baseer M. (2015). Dietary habits and life style among Preuniversity college students in Raichur. India International Journal of Research in Health Sciences. 3(3):407- 411.
- Atiqua S, Ahluwalia S. (2015). Impact of Modern Approaches on Nutritional Health of College Going Adolescent Girls of Lucknow City. Journal of Finance and Management. ;6(3):287-292.
- Patton G. C., Sawyer S. M., Santelli J. S., Ross D. A., Afifi R., Allen N. B. (2016.) . Our future: a Lancet commission on adolescent health and wellbeing. *Lancet*. 11;387 (10036):2423–78. 10.1016/S0140-6736(16)00579-1

- Gebregyorgis T., Tadesse T. and Atenafu A. (2016). Prevalence of thinness and stunting and associated factors among adolescent school girls in Adwa town, North Ethiopia.Food Sci.
- Ziapour A. &Kianipour N. (2018). Health-related Quality of Life among University Students: The Role of Demographic Variables; 12(3):JC01-JC04; DOI:10.7860/JCDR/2018/29161.11258
- Dayana M. (2019). Random Study of Dietary Pattern and Nutritional Knowledge among Adolescent Girls in an Urban Area. International Journal of Research in Pharmacy and Biosciences.;6(6):1-7.
- Bhargava M., Bhargava A., Ghate S. D., and Rao S. P. (2020). Nutritional status of Indian adolescents (15-19 years) from National Family Health Surveys 3 and 4: Revised estimates using WHO 2007 Growth reference; 15(6): e0234570.
- Centers for disease control and prevention. (2000).Measuring healthy days: population assessment of health-related quality of life. Centers for disease control and prevention, atlanta, Georgia
- Rana S., Ahmad K., Asif H. M., Ahmad K. and Zafar F. (2020). Nutritional Assessment among Undergraduate Students of the Islamia University of Bahawalpur; 9:5.
- Sharma S.,**Yadav D. K.**, KarmacharyaI. And PandeyR. (2021). Quality of Life and Nutritional Status of the Geriatric Population of the South-Central Part of Nepal; doi.org/10.1155/2021/6621278
- Hadush G., Seid O. &Wuneh A. G. (2021). "Assessment of nutritional status and associated factors among adolescent girls in Afar, Northeastern Ethiopia: a cross-sectional study" *Journal of Health, Population and Nutrition* 2(3).
- Gupta p., Kumar r., Parekh b., Basavaraja g. V. &Ugra d. (2021). Nutrition of adolescents (10–19 years) ; guidelines for parents; indian academy of pediatrics (iap).